

# Request for Bid Quotation

## Granite City Fire Department

Re: One all aluminum 1500 gpm custom side mount pumper

Date: June 17, 2020

The City of Granite City IL is seeking bids for a custom cab and chassis pumper with a 1,500 gallon per minute pump and a minimum 750 gallon water tank. The City will consider bids for “stock units” which would be available for immediate delivery.

**Bid Opening: Sealed bids must be received on or before Wednesday, July 1, 2020 at 1:30 p.m. at the office of City Clerk Judy Whitaker, City Hall 2000 Edison Ave., Granite City, IL. 62040, subsequent to which the bids will be publicly opened, read aloud, and recorded.**

### INSTRUCTIONS TO BIDDERS:

#### **\*PLEASE USE THIS FORM AS THE COVER SHEET FOR YOUR BID**

1. Bids must be received in a sealed envelope with the date and time of the bid opening on the outside of the envelope. Faxed bids will not be accepted.
2. Bid must be F.O.B. Delivery Point, 2300 Madison Ave, Granite City, Illinois unless otherwise indicated in proposal.
3. All bids should be signed and in ink, showing all facts and the total amount of the bid.
4. The City of Granite City and The Granite City Fire Department reserves the right to accept or reject in part or in whole any bid submitted, whichever is in the best interest of the Granite City Fire Department.

Each bidder shall supply, with their proposal, detailed information on the bidder's ability to perform routine and emergency service on the apparatus after delivery. Detailed information shall be provided on service facilities, personnel, service vehicles, and the type and nature of repair work the bidder is able to provide. Bidder shall state the number of miles from the Purchaser's facility to the nearest fully staffed repair facility operated by the bidder. It is the intent of the Purchaser to assure that parts and service are readily available for the equipment specified. Service capabilities will be an important criteria for award of this contract.

## **SERVICE ABILITY FORM**

Service Center Location: \_\_\_\_\_

Distance in miles (one way) from Service Center Location to the Purchaser's Location, **2300 Madison Ave., Granite City, Ill. 62040**, is \_\_ miles.

Please answer the following questions:

Is the shop an authorized warranty center for the apparatus manufacturer? \_\_\_\_\_Yes\_\_\_\_\_No

Is the Service Center enclosed and heated? \_\_\_\_\_Yes\_\_\_\_\_No

Does your service facility have on site and mobile pump test capability? \_\_\_\_\_Yes\_\_\_\_\_No

Number of full time Service Center Employees: \_\_\_\_\_

Number of EVT Certified Technicians \_\_\_\_\_

Number of Fire Pump Manufacturer's Certified Employees: \_\_\_\_\_

Number of fully equipped service vans: \_\_\_\_\_

Is your shop equipped to handle, without subletting, the following:

Body repairs \_\_\_\_\_Yes \_\_\_\_\_No

Water tank repair \_\_\_\_\_Yes \_\_\_\_\_No

Major pump repairs \_\_\_\_\_Yes \_\_\_\_\_No

Welding \_\_\_\_\_Yes \_\_\_\_\_No

Aerial device repairs \_\_\_\_\_Yes \_\_\_\_\_No

This form was completed and submitted by: \_\_\_\_\_

Title of individual completing this form: \_\_\_\_\_

Signature of individual completing this form \_\_\_\_\_

# Specifications

## Granite City Fire Department

**ITEM:** *One Model Year 2019 or newer all aluminum 1500 gpm custom side mount pumper.*

**LOCATION:** Granite City Fire Department

2300 Madison Ave.

Granite City, IL. 62040

**CONTACT:** Vince Martinez, Chief

2300 Madison Ave

Granite City, IL. 62040

(618) 877-6114

Cell # 618-779-8708

**BID OPENING:** Bids must be received in a sealed envelope, with the date and time of the bid opening on the outside of the envelope, on or before, **July 1, 2020 at 1:30 p.m. at the office of City Clerk Judy Whitaker, City Hall 2000 Edison Ave., Granite City, IL. 62040, subsequent to which the bids will be publicly opened, read aloud, and recorded.**

*Faxed or e-mailed bids will not be accepted.*

**Rejection of Bids:** The City of Granite City and the Granite City Fire Department reserve the right to reject any and/or all bids and to waive any informality in bidding. Upon opening, all bid documents become public record.

**SPECIFICATIONS:** The following specifications are intended to describe a model year 2019 rescue engine fire apparatus and accessories for the Granite City Fire Department and the details contained in these specifications are not designed to exclude any vendor from bidding, but are offered as a means of describing the needs of the Granite City Fire Department. All specifications are minimum requirements.

**SPECIFICATIONS and other documents will be available for downloading at**  
***<http://www.granitecity.illinois.gov/>***

## CUSTOM PUMPER REQUIREMENTS

Bidder shall supply hose bed capacity.

The apparatus shall have no overall height restrictions. Desired overall length not to exceed 31'

Equipment allowance on the apparatus shall be 2000 lbs. This allowance is in addition to the weight of the hoses and ground ladders listed in the shop order as applicable.

## **Chassis**

The vehicle shall be equipped with a one-piece 10" high bumper made from 10 gauge (0.135" nominal) polished stainless steel. The bumper shall be extended from the face of the cab as needed.

A hose tray constructed of 1/8" aluminum with lid shall be recessed into the front bumper extension. The tray shall be located in the center of the bumper and be approximately 14" deep (13" to the top of the slats). The lid shall be hinged and include a latch, rubber seal and held open with a pneumatic shock.

The body shall be supported at the rear by a steel frame extension bolted to the chassis frame rails.

The frame shall consist of two (2) C-channel frame rails with heavy-duty cross-members.

There shall be a minimum of six (6) cross-members joining the two (2) frame rails in order to make the frame rigid and hold the rails/liners in alignment. The cross-members shall be a combination of a formed steel C-channel design along with heavy duty steel fabricated designs as required for the exact chassis configuration.

The frame rails shall be hot-dip galvanized and powder coated for improved corrosion resistance. The galvanization shall be a minimum of 4 mils thick and done in accordance with ASTM A123. The powder coat shall be 6.5 mils thick (+/- 1.5 mils) and pass ASTM D3359 testing.

The apparatus manufacturer shall supply a full lifetime frame warranty including cross-members against defects in materials or workmanship..

The vehicle shall utilize a Meritor FL-941 front axle with a rated capacity of 18,700 lbs.

Tapered leaf springs provide a 20% ride improvement over standard straight spring systems. Supporting documentation/data shall be provided upon request.

The vehicle shall be equipped with a Sheppard model M-110 power steering gear, used in conjunction with a power assist cylinder. The steering assembly shall be rated to statically steer up to a maximum front axle load of 18,700 lbs. Relief stops shall be provided to reduce system pressure upon full wheel cut. The system shall operate mechanically should the hydraulic system fail.

Koni model 90 shock absorbers shall be provided for the front axle. The shocks shall be three way adjustable.

The front axle shall have Stemco oil seals with sight glass to check the lubricant level of the axle spindles.

The vehicle shall be equipped with an Meritor RS-25-160 single rear axle with single-reduction hypoid gearing and a manufacturer's rated capacity of 27,000 lbs. The axle shall be equipped with oil-lubricated wheel bearings with Meritor oil seals.

The rear suspension shall be a pair of linear-rate leaf springs with auxiliary "helper" leaf springs and bronze bushings.

The front and rear wheels shall have a Real Wheels stainless steel wheel trim package.

Each inside rear wheel on the rear axle shall have valve extensions.

The vehicle shall have two (2) Accuride polished (on outer wheel surfaces only) aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires.

The wheel shall have a load rating of up to 11,000 lbs. each (up to 11,400 lb rating available with speed limited to 60 MPH)

The vehicle shall have four (4) Accuride polished (on outer wheel surfaces only) aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires.

The front tires shall be two (2) Michelin 385/65R22.5 tubeless radial tires with X MULTIWAY HD XZE highway tread.

The tires with wheels shall have the following weight capacity and speed ratings: 22,000 lbs. @ 68 MPH (steel or aluminum wheels)

Max front rating with Alcoa aluminum wheels - 23,540 @ 68 MPH (intermittent fire service rating if GAW is over 22,000)

The rear tires shall be Michelin 12R22.5 tubeless type radial tires with XDN2 all-weather tread.

All tires shall be equipped with Real Wheels or equal LED tire pressure indicating valve stem caps.

The front axle shall be equipped with Meritor DiscPlus EX225H 17 inch disc brakes.

The rear axle shall be equipped with Meritor DiscPlus EX225H 17 inch disc brakes with a maximum rated capacity of 27,000 lbs.

The vehicle shall be equipped with air-operated brakes and an anti-lock braking system (ABS). The brake system shall meet or exceed the design and performance requirements of the current

Federal Motor Vehicle Safety Standard (FMVSS)-121, and the test requirements of the current NFPA 1901 Standard.

One (1) Bendix-Westinghouse PP-5 parking brake control valve shall be supplied on the lower dash panel within easy reach of the driver.

The apparatus shall be equipped with a G4 4S4M Electronic Stability Control (ESC) system

The chassis air system shall be equipped with a Bendix-Westinghouse AD-9 air dryer to remove moisture from the air in order to help prevent the air lines from freezing in cold weather and prolong the life of the braking system components.

Air brake lines shall be constructed of color coded nylon tubing routed in a manner to protect them from damage. Brass fittings shall be provided.

Dual Grover air horns shall be provided, connected to the chassis air system. The horns shall be mounted through the front bumper.

A push-button transmission shift module, Allison model 29538373, shall be supplied.

The transmission fluid shall be TranSynd, Shell Spirax S6ATF A295, or equivalent synthetic.

The vehicle shall utilize a Cummins L9 engine as described below:

- 450 maximum horsepower at 2100 rpm
- 1250 lb-ft peak torque at 1400 rpm
- Six (6) cylinder, charge air cooled, 4-cycle diesel
- 543 cu. in. (8.9 liter) displacement - 4.49 in bore x 5.69 in stroke
- 16.6:1 compression ratio
- Viable Geometry Turbocharged
- Engine shall be equipped with Full-Authority Electronics
- Electronic Timing Control fuel system
- Fuel cooler (when equipped with a fire pump)
- Fleetguard FS1022 fuel filter with integral water separator and water-in-fuel sensor approved by Cummins for use on the ISL engine
- Fleetguard LF9009 Venturi Combo combination full-flow/by-pass oil filter approved by Cummins for use on the ISL engine
- Engine lubrication system, including filter, shall have a minimum capacity of 25 quarts
- Delco-Remy 39 MT-HD 12-volt starter
- Cummins 18.7 cubic foot per minute (cfm) air compressor
- Corrosion inhibitor additive for coolant system
- After treatment system consisting of a oxidation catalyst and diesel particulate filter and selective catalyst reduction system
- Ember separator compliant with current NFPA 1901 standard
- The engine shall be compliant with 2017 EPA Emission standards

A 5-year/100,000-miles parts and labor warranty shall be provided as standard by Cummins.

A copy of the Engine Installation Review stating the engine installation meets Cummins recommendations shall be provided as requested. The engine installation shall not require the operation of any type of "power-down" feature to meet engine installation tests.

The vehicle shall utilize an Allison EVS3000P, electronic, 5-speed automatic transmission.

A push button shift module shall be located right side of the steering column, within easy reach of the driver.

A 5-year/unlimited miles parts and labor warranty shall be provided as standard by Allison Transmission.

One (1) Jacobs engine brake shall be installed to assist in slowing and controlling the vehicle as required by NFPA 1901 for vehicles with gross vehicle weight ratings (GVWR) of 36,000 lbs. or greater.

The transmission shall include the Allison 2nd gear Pre-Select feature. This option will direct the transmission to down shift to second gear when the throttle is released and the Jacobs engine brake is engaged.

The cooling system shall include an aluminum tube-and-fin radiator with a minimum of 1,408 total square inches of frontal area to ensure adequate cooling under all operating conditions. All radiator and heater hoses shall be silicone. There shall be a coolant overflow recovery system provided. The system shall also include a charge air cooler to ensure adequate cooling of the turbocharged air for proper engine operation and maximum performance.

One (1) minimum 50 gallon fuel tank shall be provided. The tank shall be of an all-welded, aluminized-steel construction with anti-surge baffles and shall conform to all applicable Federal Highway Administration (FHWA) 393.65 and 393.67 standards.

A mechanical fuel pump shall be provided and sized by the engine manufacturer as part of the engine. All fuel lines shall be rubber.

There shall be a minimum 320 amp Leece Neville alternator installed as specified. The alternator shall be a Leece Neville 4890JB series brushless type with integral rectifier and adjustable voltage regulator with an output of 272 amps per NFPA 1901 rating (320 amps per SAE J56).

The manufacturer shall supply four (4) heavy duty Group 31 12-volt maintenance-free batteries.

The engine shall be equipped with a thermostatically controlled engine cooling fan. The fan shall be belt driven and utilize a clutch to engage when the engine reaches a specified temperature and / or the water pump is engaged.

Two (2) heavy duty tow eyes made of 3/4" (0.75") thick steel having 2-1/2" diameter holes shall be mounted below the body at the rear of the vehicle to allow towing (not lifting) of the apparatus without damage.

Two (2) heavy duty painted front tow hooks shall be securely bolted to the front chassis frame rail extensions to allow towing (not lifting) of the apparatus without damage. They shall be mounted in the downward position.

A diesel exhaust fluid (DEF) tank with a five (5) gallon capacity shall be provided.

A heat exchanger (cooler) shall be installed to maintain desired power steering fluid temperature.

## **Custom Cab**

The cab shall be an all-welded aluminum and fully enclosed tilt cab. The cab shall be designed exclusively for fire/rescue service. The cab shall be constructed from 3/16" (0.188") 3003 H14 aluminum alloy plate roof, cab roof, floor, and outer skins welded to a high-strength 6063-T6 aluminum alloy extruded sub frame..

The exterior of the cab shall be 94" wide x 130" long to allow sufficient room in the occupant compartment for up to eight (8) fire fighters. The back-of-cab to front axle length shall be a minimum of 58".

The rear portion of the cab roof shall be raised 12".

Front axle fenderette trim shall be brushed aluminum for appearance and corrosion resistance. Bolt-in front wheel well liners shall be constructed of 3/16" (0.188") composite material. The cab windshield shall be of a two-piece replaceable design for lowered cost of repair visibility in congested areas.

The cab shall be independently mounted from the body and chassis to isolate the cab structure from stresses caused by chassis twisting and body movements. Mounting points shall consist of two (2) forward-pivoting points, one (1) on each side; two (2) intermediate rubber load-bearing cushions located midway along the length of the cab, one on each side; and two (2) combination rubber shock mounts and cab latches located at the rear of the cab, one (1) on each side.

An electric-over-hydraulic cab tilt system shall be provided to provide easy access to the engine. It shall consist of two (2) large-diameter, telescoping, hydraulic lift cylinders, one (1) on each side of the cab, with a frame-mounted electric-over-hydraulic pump for cylinder actuation.

The interior of the cab shall be of the open design with an ergonomically-designed driver area that provides ready access to all controls as well as a clear view of critical instrumentation.

The engine cover between the driver and the officer shall be a low-rise contoured design to provide sufficient seating and elbow room for the driver and the officer. The engine cover shall blend in smoothly with the interior dash and flooring of the cab. The rear portion of the engine cover shall be provided with a lift-up section to provide easy access for checking transmission fluid, power steering fluid, and engine oil without raising the cab. All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 1901.

A minimum of 57.25" of floor-to-ceiling height shall be provided in the front seating area of the cab and a minimum of 55.25" floor-to-ceiling height shall be provided in the rear seating area. A minimum of 36" of seated headroom at the "H" point shall be provided over each fender well.

Battery jumper studs shall be provided to allow jump-starting of the apparatus without having to tilt the cab.

The interior of the cab shall be insulated to ensure the sound (dbA) level for the cab interior is within the limits stated in the current edition of NFPA 1901. The vehicle shall use a seven-position tilt and telescopic steering column to accommodate various size operators. An 18" padded steering wheel with a center horn button shall be provided.

Storage areas, with hinged access doors, shall be provided below the driver and officer seats. The front cab steps shall be a minimum of 8" deep x 24" wide.

The step surfaces shall be aluminum diamond plate with a multi-directional, aggressive gripping surface incorporated into the aluminum diamond plate in accordance with current NFPA 1901.

There shall be reflective signs on each cab door in compliance with all NFPA requirements.

Four (4) side-opening cab doors shall be provided. Doors shall be constructed of a 3/16" (0.188") aluminum plate outer material with an aluminum extruded inner framework to provide a structure that is as strong as the side skins.

The doors shall be securely fastened to the doorframes with full-length, stainless steel piano hinges.

Stainless steel paddle-style door latches shall be provided on the interiors of the doors.

The front door windows shall provide a minimum viewing area of 530 sq. in. each. The rear door windows shall provide a minimum viewing area of 500 sq. in. each. All windows shall have 75% light transmittance automotive safety tint. Full roll-down windows shall be provided for the front cab doors.

Two (2) pantograph-style windshield wipers with two (2) separate electric motors shall be provided for positive operation. The wipers shall be a wet-arm type with a one (1) gallon washer fluid reservoir, an intermittent-wipe function, and an integral wash circuit.

Cab controls shall be located on the cab instrument panel in the dashboard on the driver's side where they are clearly visible and easily reachable. Emergency warning light switches shall be installed in removable panels for ease of service. The following gauges and/or controls shall be provided:

- Master battery switch/ignition switch (rocker with integral indicator)
- Starter switch/engine stop switch (rocker)
- Heater and defroster controls with illumination
- Marker light/headlight control switch with dimmer switch
- Self-canceling turn signal control with indicators
- Windshield wiper switch with intermittent control and washer control
- Master warning light switch
- Transmission oil temperature gauge
- Air filter restriction indicator
- Pump shift control with green "pump in gear" and "o.k. to pump" indicator lights
- Parking brake controls with red indicator light on dash
- Automatic transmission shift console
- Electric horn button at center of steering wheel
- Cab ajar warning light on the message center enunciator

A fast idle system shall be provided and controlled by the cab-mounted switch. The system shall increase engine idle speed to a preset RPM for increased alternator output.

## **Electrical System**

The cab and chassis system shall have a centrally located electrical distribution area

A 6 place, constantly hot, and 6 place ignition switched fuse panel and ground for customer-installed radios and chargers shall be provided at the electrical distribution area. Radio suppression shall be sufficient to allow radio equipment operation without interference.

A Vehicle Data Computer (VDC) shall be supplied within the electrical system to process and distribute engine and transmission Electronic Control Module (ECM) information to chassis system gauges, the message center, and related pump panel gauges.

Two (2) dual rectangular chrome plated headlight bezels shall be installed on the front of the cab. The low beam headlights shall activate with the release of the parking brake to provide daytime running lights (DRL) for additional vehicle conspicuity and safety. The headlight switch shall automatically override the DRL for normal low beam/high beam operation.

The apparatus cab shall meet and/or exceed relevant NFPA 1901 load and impact tests required for compliance certification with the following:

Side Impact Dynamic Pre-Load per SAE J2422 (Section 5).

Quasi-static Roof Strength (proof loads) per SAE J2422 (Section 6) / ECE R29, Annex 3, paragraph 5.

Frontal Impact per SAE J2420.

The cab shall meet all requirements to the above cab crash worthiness; **NO EXCEPTIONS.**

A copy of a certificate or letter verifying compliance to the above performance by an independent, licensed, professional engineer shall be provided upon request.

The manufacturer shall ensure that the construction of the apparatus cab shall be in conformance with the established ISO-compliant quality system. All written quality procedures and other procedures referenced within the pages of the manufacturer's Quality Manual, as well as all Work Instructions, Workmanship Standards, and Calibration Administration that directly or indirectly impacts this process shall be strictly adhered to. By virtue of its ISO compliance the manufacturer shall provide an apparatus cab that is built to exacting standards, meets the customer's expectations, and satisfies the customer's requirements.

The front cooling air intake grille shall be constructed of stainless steel mesh and supported by a 0.80" polished stainless steel frame providing no less than 81% open area for excellent cooling performance.

The rear cab door windows shall be manually operated to raise and lower.

The front windows of the cab shall have manual actuation.

Each cab door shall have a manual operated door lock actuated from the interior of each respective door. Exterior of each cab door shall be provided with a barrel style keyed lock below the cab door handle.

The cab shall have 1250 keyed door locks provided on exterior doors to secure the apparatus.

The inner door panels shall be made from 14 gauge brushed finish stainless steel for increased durability. The cab door panels shall incorporate an easily removable panel for access to the latching mechanism for maintenance or service.

All cab doors shall have "L" style exterior door latches.

Reflexite V98 Red/Fluorescent Yellow Green reflective striping shall be supplied on each of the cab doors.

There shall be four (4) clear TecNiq model T440 or equal 4" circular LED lights provided to illuminate the cab step well area. Each light shall be activated by the cab door ajar circuit.

An auxiliary step below the cab door shall be provided. The step shall be in accordance with current NFPA requirements and shall include a multi-directional aggressive gripping surface incorporated into the diamond plate.

The step shall be located driver's front door, officer's front door, driver side rear door, officer side rear door.

There shall be two (2) Lang Mekra or equal 300 Aero Series Technology Mirrors provided, one (1) driver's and one (1) officer's side. The mirrors shall be mounted on the cab doors.

There shall be a fixed window provided between the front and rear doors on the driver's and officer's side of the cab.

Black linear low density polyethylene (proprietary blend) mud flaps shall be installed on the rear of the cab front wheel wells. The design of the mud flaps shall have corrugated ridges to distribute water evenly.

Cab door assist handrails shall consist of two (2) Hansen white LED lighted cab door assist handrails consisting of (2) 18" long tubes mounted directly behind the driver and officer door openings one each side of the cab and (2) 36" long handrails mounted directly behind the driver and officer rear door openings one each side of the cab. Handrail lighting shall be wired through clearance / headlight switch and only activate when park brake is set.

A mounting plate shall be provided for the battery charger receptacle, battery charger indicator and if applicable the air inlet, etc. The plate shall be constructed of 14 gauge brushed finish stainless steel and be removable for service access to the receptacle(s) and indicator.

An overhead air-conditioner / heater system with a single radiator mounted condenser shall be supplied. The unit shall be mounted to the cab interior headliner in a mid-cab position, away from all seating positions. The unit shall provide ten (10) comfort discharge louvers, four (4) to the back area of the cab and six (6) to the front. These louvers will be used for AC and heat air delivery. Two (2) additional large front louvers shall be damper controlled to provide defogging and defrosting capabilities to the front windshield as necessary.

A three-speed blower switch shall control air speed. The condenser shall be radiator mounted and have a minimum capacity of 65,000 BTU's and shall include a receiver drier.

The system shall be capable of cooling the interior of the cab from 100 degrees ambient to 75 degrees or less with 50% relative humidity in 30 minutes or less.

Heating and air conditioning controls shall be located in the center dash area upper tier offset to driver side.

One (1) H. O. Bostrom 400 Series Sierra Air- 100RX4 suspension seats with high back styling shall be supplied for the driver position.

One (1) Bostrom 400 Series tanker 450 SCBA air suspension seat shall be supplied for the officer's position.

## **Cab interior**

One (1) Bostrom 400 Series tanker 450 SCBA high back SCBA storage seat shall be provided in the rear facing position over the driver side and officer side wheel well

All seat positions shall have a bright red retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal

A tag that is in view of the driver stating seating capacity of four (4) personnel shall be provided.

The H.O. Bostrom SecureAll™ SCBA Locking System shall be one bracket model and store all U.S. and international SCBA brands and sizes while in transit or for storage on fire trucks. The bracket shall be easily adjustable; all adjustment points shall utilize similar hardware and adjustments shall be made with one tool. The bracket(s) shall be located officer's seat, rear facing driver's side, rear facing officer's side.

Seat covers: low seam Durawear Plus (EA). Bostrom seats on bottom cushion only.

Padded sun visors shall be provided for the driver and officer matching the interior trim of the cab and shall be flush mounted into the underside of the overhead console.

The center and officer side dash shall be constructed from .125" smooth aluminum plate painted to match the cab interior. A hinged access panel shall be provided on top of the center dash to provide easy access to components within.

The engine cover and engine service access door cover shall be molded 18 lb/cu. ft. (+/-0.5) flexible integral skinned polyurethane foam at a Durometer of 60 (+/- 5.0) per ASTM F1957-99. The cover shall be approximately .5" thick with a minimum skin thickness of 0.0625 inches. The cover shall be provided to reduce the transmission of noise and heat from the engine. The cover shall be black and feature a pebble grain finish for slip resistance.

A cup holder and tray assembly shall be provided on the cab engine cover between the driver and officer.

A full-width front overhead console shall be mounted to the cab ceiling for placement of siren/radio heads and for warning light switches. The overhead HVAC shall be covered with thermoformed, non-metallic, non-fiber trim pieces to provide excellent scuff and abrasion resistance, as well as chemical stain resistance.

A Weldon LED dome light assembly with one (1) white lens and one (1) red lens and plastic housing shall be installed. The white light activates with appropriate cab door and light assembly switch, the red light activates with light assembly mounted switch only.

There shall be two (2) mounted in the front and rear of the cab, one (1) in the driver and one (1) on the officer side.

The battery charger receptacle shall be a Kussmaul 20 amp NEMA 5-20 Super Auto-Eject #091-55-20-120 with a cover. The Super Auto-Eject receptacle shall be completely sealed and have an automatic power line disconnect. The receptacle shall be located outside driver's door next to handrail and the cover color shall be Yellow.

A two (2) position rocker switch shall be installed in the cab accessible to the driver and properly labeled to enable operator to activate the OEM traffic horn or air horn from the steering wheel horn button.

An Automatic Traction Control (ATC) override switch shall be provided. The switch shall be located within reach of the driver and allow for momentary disabling of the ATC system due to mud or snow conditions.

The cab operational instruments shall be located in the dashboard on the driver side of the cab and shall be clearly visible. The gauges in this panel shall be English dominant and shall be the following:

- Speedometer/Odometer
- Tachometer with integral hour meter
- Engine oil pressure gauge with warning light and buzzer
- Engine water temperature gauge with warning light and buzzer
- Two (2) air pressure gauges with a warning light and buzzer (front air and rear air)
- Fuel gauge
- Voltmeter
- Transmission oil temperature gauge

This panel shall be backlit for increased visibility during day and night time operations.

The front of the cab shall have four (4) headlights. The headlights shall be mounted on the front of the cab in the lower position. The headlights shall be day time operational.

JW Speaker LED headlight model 8800 shall be provided in the low and high beam position of the head lamp assembly.

A heavy duty metal clamshell switch shall be installed on the officer's side of the engine cover to operate the air horns.

A plug-in type receptacle for hand held spotlights, cell phones, chargers, etc. shall be installed driver side dash, officer side dash. The receptacle shall be wired battery hot.

There shall be a Tessco P/N 90942 universal antenna base mounted on the cab roof with a weatherproof connector. The antenna base shall be NMO Motorola Style (equivalent to a MATM style) with RG58U coax cable. The antenna shall be located driver side rearward with coaxial cable terminating at the center of the dash board.

An LPC 20 battery charger with remote mounted LED display shall be installed.

A dual USB charging port for cell phones, chargers, etc. shall be installed driver side dash, officer side dash. The receptacles shall be wired battery hot.

A momentary override switch shall be provided for the Diesel Particulate Filter (DPF) regeneration. The switch will inhibit the regeneration process until the switch is reset or the engine is shut down and restarted. The switch shall be located within reach of the driver.

There shall be a pair of Whelen C-Series model C6T LED turn signals with populated arrow pattern and amber lens mounted upper headlight bezel and wired with weatherproof connectors.

## **Body**

The driver side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates.

The three (3) driver side compartments shall be constructed from smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 68" high.

There shall be one (1) compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 56" wide x 34" high.

There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 56" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 40 cu. ft. of combined storage space. The door opening shall be approximately 56" wide x 68" high.

The forward driver side body compartment shall have a raised lower full depth area. This shall provide increased compartmentation for storage of larger rescue style equipment and/or tools.

The officer side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates.

The three (3) officer side compartments shall be constructed from smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 68" high.

There shall be one (1) compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 56" wide x 34" high.

There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 56" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 40 cu. ft. of combined storage space. The door opening shall be approximately 56" wide x 68" high.

The rear compartment shall be approximately 38" wide x 30" high and as deep as applicable to required tank design per application. The door opening shall be approximately 38" wide x 30" high. This compartment shall be transverse through to the side rear compartments.

A tailboard step shall be provided at the rear of the body. The tailboard shall 10" in depth and in accordance with NFPA in both step height and stepping surface. The maximum rear step height to the tailboard shall not exceed 24".

Handrails shall be provided at the rear of the body to assist ground personnel accessing the tailboard step and hosebed area. Each handrail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, and shall be mounted between chrome stanchions.

The handrails shall be located- two (2) handrails, one (1) on each side, appropriately sized handrail mounted vertical on the trailing edge of the body and appropriately sized handrail(s) mounted horizontal below the rear hosebed opening.

A ROM brand or equal roll up door with satin finish shall be provided on all compartments.

The Robinson door slats shall be double wall box frame and manufactured from anodized aluminum. The slats shall have interlocking end shoes on each slat. The slats shall have interlocking joints with a PVC/vinyl inner seal to prevent any metal to metal contact and inhibit moisture and dust penetration.

The track shall be anodized aluminum with a finishing flange incorporated to provide a finished look around the perimeter of the door without additional trim or caulking. The track shall have a replaceable side seal to prevent water and dust from entering the compartment.

TA magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.

## **SHELVES, TRAYS AND TOOLBOARDS**

The following shelves, trays and tool boards will be supplied and installed, locations to be determined by the Fire Chief.

There shall be 2 permanent mounted aluminum shelves provided for a compartment as specified. The shelf shall be at the offset (unless otherwise specified) within the compartment.

The shelf shall be constructed of 3/16" (.187") smooth aluminum plate. The shelf shall have a minimum 2" front lip for added strength and reinforcement and to accommodate optional plastic interlocking compartment tile systems. The shelves shall be capable of holding 100 lbs.

Eight (8) adjustable aluminum shelves with tracking shall be supplied and installed. .

Four (4) floor mounted aluminum roll out trays with 500# capacity slides will be supplied and installed..

Two (2) vertical slide out aluminum tool boards with slides are to be supplied and installed.

One aluminum swing out tool board will be supplied and installed.

A vinyl NFPA Hosebed cover and crosslay cover shall supplied and installed.

An extruded aluminum pump module shall be provided and located forward of the apparatus body. The pump module shall be constructed entirely of welded aluminum alloy extrusions and interlocking aluminum plates. The pump module design and mounting shall be separate from the body.

A pump service access door shall be provided at the front of the pump module. The door shall be secured with two (2) thumb latches. (Access door not provided on fixed cab applications)

The pump module shall include a running board on each side. The running boards shall be in accordance with NFPA in both step height and stepping surface. The running boards shall be formed from .125" aluminum treadplate.

Each running board shall include a multi-directional, aggressive gripping surface incorporated into the treadplate. Each running board shall be bolted on to the pump module and be easily removable for replacement in the case of damage.

The driver and officer side pump panels shall be constructed of 14 gauge stainless steel. Each panel shall have the ability to be removed from the module for easier access and for maintenance in the pump area.

The officer side pump module shall include an upper horizontal hinged pump access door. The driver side upper gauge panel(s) shall be hinged to provide access to panel mounted electrical connections.

Color coded pump panel labels shall be supplied to be in accordance with NFPA 1901 compliance.

A heavy duty weatherproof push-button switch shall be installed at the pump operator's panel to operate the air horns. The switch shall be labeled "Evacuation Alert".

Two (2) crosslay hosebeds shall be provided on the pump module. Each of the two (2) crosslay areas shall have a capacity of up to 400' of 2.0" double-jacket fire hose double stacked. The crosslay floor and side walls shall be constructed of 3/16" (.188) smooth aluminum plate. One (1) 1/4" (.25") smooth aluminum plate fixed divider with a sanded finish shall be provided to separate the two (2) hose storage areas.

A 780 gallon (U.S.) "L" booster tank shall be supplied.

A 30 gallon (U.S.) foam cell for Class A foam shall be supplied. The foam cell shall be integral to the water tank.

The booster tank shall be constructed of polypropylene material. The booster tank shall be completely removable without disturbing or dismounting the apparatus body structure. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed.

One (1) 2" pump-to-tank fill line having a 2" manually operated full flow valve. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times. The fill line shall be controlled using a chrome handle with an integral tag.

One (1) manually operated 3" Akron valve shall be installed between the pump suction and the booster tank. Includes flex hose with stainless steel hose clamps for connection to the 4" tank sump outlet. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

An officer side vertical storage tunnel shall be provided. The tunnel shall be for use with a low hose bed. Tunnel shall hold: 2-section 24', 14' roof, 10' attic and (2) pike poles. The tunnel shall include a vertical hinged rear diamond plate door with a push-button latch.

The following ladders shall be supplied: Alco-Lite: 24' 2-section, 14' roof, and 10ft folding ladder.

Innovative Controls or equal dual lighted LED folding steps shall be positioned to the driver and officer side rear of the body. The steps shall be NFPA compliant for access to the hose bed storage area and in step height and surface area. The steps shall be staggered stepped as applicable with tailboard depth, not applicable with recessed step mounting.

One (1) hand rail shall be installed (as applicable) in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

An 10" intermediate step below the hosebed shall be provided. The step shall be constructed of 3/16" (.187") aluminum embossed treadplate. The step shall be bolted below the hosebed and be easily removable for replacement in the case of damage. The top rear surface of the step to have three (3) hand hold cut-outs horizontally.

Four Innovative Controls or equal dual lighted LED folding step(s) shall be located officer side front compartment face, driver side front compartment face. The folding step(s) shall meet current NFPA in step height and surface area.

One (1) hand rail shall be installed in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

Black mud flaps shall be provided for the body wheel wells.

The body mainframe shall be entirely constructed of aluminum.

The main body shall be attached to the chassis frame rails with six (6) of 5/8" (0.625") diameter steel U-bolts. This body mounting system shall be used to allow easy removal of the body for major repair or disassembly.

The hosebed side assemblies shall be made of 3" x 3" slotted aluminum extrusion and 3/16" (.188") smooth plate. The hosebed side assemblies shall provide a 85" high body.

The area above the booster tank shall have a hose storage area provided. The hose bed shall be constructed entirely from maintenance-free, 3/4" deep x 7.5" wide, extruded aluminum slats that

shall be pop-riveted into a one-piece grid system. The hose bed design shall incorporate adjustable tracks in the forward area and the rearward area of the hose bed for the installation of an adjustable divider(s). The hose bed shall be easily removable to allow access to the booster tank below.

There shall be an aluminum hose bed divider provided the full fore-aft length of the hose bed. The divider shall be adjustable from side to side in the hose bed to accommodate varying hose loads. There shall be a hand hole cut-out(s) on the trailing edge of each hose bed divider. A recessed fuel fill shall be provided at the driver side rear wheel well area.

The body wheel well frame shall be constructed from aluminum with a slot the full length to permit an internal fit of aluminum treadplate. The wheel well trim fenderette shall be constructed from formed aluminum extrusion. The wheel well liners shall be constructed of composite material. The liners shall be bolt-on and shall provide a maintenance-free and damage-resistant surface.

The pump area module(s) and body shall have rub rails mounted along the sides and at the rear. The rub rail shall be C-channel in design and constructed of 3/16" thick 6463T6 anodized aluminum extrusion.. The ends of each section shall be provided with a finished rounded corner piece.

A anodized aluminum trim shall be located at the bottom edge of all body compartment openings including pump enclosure with painted edge (as applicable). The trim shall provide added protection of the painted surface of the body when equipment is removed from the compartment.

(1) SCBA bottle storage constructed with aluminum plate with hinged door and push button latch shall be provided in the body wheel well area. Location: driver side rear wheel well offset rearward

(3) SCBA bottle storage constructed with aluminum plate with hinged door and push button latch shall be provided in the body wheel well area. Location: driver side rear wheel well offset forward, officer side rear wheel well offset forward, officer side rear wheel well offset rearward

Straps shall be provided in each exterior storage compartment to provide secondary means to hold each SCBA bottle in the compartment.

## **Fire Pump System**

The pump shall be a midship-mounted Hale QMAX single stage 1500 gpm centrifugal pump. The pump shall be mounted on the chassis frame rails of commercial or custom truck chassis and have the capacity of 1,250 to 2,250 gallons per minute (U.S. GPM) NFPA 1901 rated performance, and shall be split-shaft driven from the truck transmission.

The entire pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 psi (207 MPa). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump body shall be horizontally split in two sections, for

easy removal of impeller assembly including wear rings and bearings from beneath the pump without disturbing pump mounting or piping.

The pump impeller shall be hard, fine grain bronze of the mixed flow design and shall be individually ground and hand balanced. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

The pump shaft shall be heat-treated, corrosion-resistant stainless steel and shall be rigidly supported by three (3) bearings for minimum deflection. The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure-balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and shall be splash-lubricated. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.

Two (2) 6" diameter suction ports with 6" NST male threads and removable screens shall be provided, one each side. The ports shall be mounted one (1) on each side of the midship pump and shall extend through the side pump panels. Inlets shall come equipped with long handle chrome caps.

The pump system shall utilize a stainless steel discharge manifold system that allows a direct flow of water to discharge valves. The manifold and fabricated piping systems shall be constructed of a minimum of Schedule 10 stainless steel to reduce corrosion.

The pump shift shall be pneumatically-controlled using a power shifting cylinder.

Two (2) test plugs shall be pump panel mounted for third party testing of vacuum and pressures of the pump.

A gearbox cooler shall be provided to maintain safe operating temperatures during prolonged pumping operations for pump rating 1500 GPM and over.

The pump, when dry, shall be capable of taking suction and discharging water in accordance with current NFPA 1901. The pump shall be tested at the manufacturer's facility by an independent, third-party testing service. The conditions of the pump test shall be as outlined in current NFPA 1901.

A Certificate of Inspection certifying performance of the pump and all related components shall be provided at time of delivery. Additional certification documents shall include, but not limited to, Certificate of Hydrostatic Test, Electrical System Performance Test, Manufacturer's Record of Pumper Construction, and Certificate of Pump Performance from the pump manufacturer.

The test connection shall be installed on the pump panel to manually verify the vehicle engine speed displayed on the electronic tachometer.

The midship pump shall be equipped with a high quality, spring loaded, self-adjusting mechanical seal capable of providing a positive seal to atmosphere under all pumping conditions. This positive seal to atmosphere must be achievable under vacuum conditions up to 26 Hg (draft) or positive suction pressures up to 250 psi.

The mechanical seal assembly shall be 2 inches in diameter and consist of a carbon sealing ring, stainless steel coil spring, Viton rubber boot, and a tungsten carbide seat, with a Teflon back-up seal provided.

Only one mechanical seal shall be required, located on the first stage suction (inboard) side of the pump and be designed to be compatible with a one piece pump shaft (no exceptions). A continuous cooling flow of water from the pump shall be directed through the seal chamber when the pump is in operation.

A manual master drain valve shall be installed on the pump panel. The master pump drain assembly shall consist of a Class 1 bronze master drain with a rubber disc seal. The master drain shall have a rubber seal to prevent water from running out on the running board.

The pump shall have a 3/8" line installed from the pump discharge to the booster tank to allow a small amount of water to circulate through the pump casing in order to cool the pump during sustained periods of pump operation when water is not being discharged.

The auxiliary engine cooler shall be controlled from the pump operator's panel by an Innovative Controls 1/4 turn valve with "T" handle. 1/2" lines shall be installed from the pump discharge via the valve to the cooler and back to the pump intake to allow a small amount of water to circulate through the engine cooler.

A Trident air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM or more. The primer shall be three-barrel design with 3/4" NPT connection to the fire pump.

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied "protected" air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

The primer control shall have a manually operated, panel mounted "push to prime" air valve. The valve shall direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control. The primer shall be covered by a five (5) year parts warranty.

## **Plumbing**

One (1) 2-1/2" suction inlet with a manually operated 2-1/2" Akron valve shall be provided on the left side pump panel. The valve control shall be located at the pump operator's panel and

shall visually indicate the position of the valve at all times. A 3/4" bleeder valve assembly will be installed on the left side pump panel.

One (1) 2-1/2" gated suction inlet with a manual operated Akron valve shall be installed in the right side pump panel with the valve body behind the panel. The valve control shall be located at the intake and shall visually indicate the position of the valve at all times. A 3/4" bleeder valve assembly will be installed on the right side pump panel.

TFT A18 Series - PRESSURE RELIEF VALVE which is adjustable from 50 to 250 psi (3 to 14 bar) with easy to see 25 psi (2 bar) increments.

One (1) 1-1/2" preconnect outlet with a manually operated Akron valve shall be supplied to the extended front bumper. The preconnect shall consist of a 2" heavy duty hose coming from the pump discharge manifold to a 2" FNPT x 1-1/2" MNST mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.

An air blow-out valve shall be installed between the chassis air reservoir and the front jump line. The control shall be installed on the pump operator's panel.

The discharge shall be supplied with a Class 1 automatic 3/4" drain valve assembly.

One (1) 3" deck gun discharge outlet with a manually operated Akron valve and 3" stainless steel pipe shall be provided above the pump compartment.

There shall be a brass swivel provided for the front bumper discharge located in hose tray center front bumper on lower back wall.

Two (2) single crosslay discharges shall be provided at the front area of the body. The crosslays shall include one (1) 2" brass swivel with a 1-1/2" hose connection to permit the use of hose from either side of the apparatus.

The crosslay hose bed shall consist of a 2" heavy-duty hose coming from the pump discharge manifold to the 2" swivel. The hose shall be connected to a manually operated 2" Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

Location: crosslay 1 & 2.

One (1) 2-1/2" discharge outlet with a manually operated Akron valve shall be provided at the left hand side pump panel.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

Location: left side discharge 1, left side discharge 2.

One (1) 2-1/2" discharge outlet with a manually operated Akron valve shall be provided at the right side pump panel. All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss. Location: right side discharge 2.

One (1) 2-1/2" discharge outlet with a manually operated Akron valve shall be supplied to the left rear of the apparatus by a 2-1/2" stainless steel pipe. Location: left rear discharge.

One (1) 3" discharge outlet with a manually operated Akron valve shall be provided at the right side pump panel. The discharge shall be equipped with a device that shall not allow the valve to open or close in less than three (3) seconds. Location: right side discharge 1.

An Akron 3423 Apollo monitor with tube, tips and ground base shall be supplied and installed.

The apparatus pump panel shall be equipped with Innovative Controls or equal Side Mount Valve Controls. The ergonomically designed 1/4 turn push-pull T-handle shall be chrome-plated zinc with recessed labels for color-coding and verbiage.

The bleeder/drain valves shall be Innovative Controls or equal 3/4" ball brass drain valves with a chrome-plated 1/4 turn handle. Each 1/4 turn handle grip shall feature built-in color-coding labels and a verbiage tag identifying each valve.

Innovative Controls or equal intake and/or discharge swing handle bezels shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and/or discharge ports with color and verbiage.

The apparatus shall be equipped with a Class 1 or equal "TOTAL PRESSURE GOVERNOR" (TPG) Integrated pump control system. The TPG shall have a weatherproof color display. The TPG will operate as an engine/pump pressure governor/throttle system that is connected directly to the Electronic Control Module (ECM) mounted on the engine. The TPG is to operate as a pressure sensor (regulating) governor (PSG).

The TPG shall display engine RPM, oil pressure, engine temperature and voltage along with providing critical warnings. The warning levels for oil pressure, high engine temperature, low voltage and high voltage shall be independently programmable.

The valve discharge gauges shall be 2 1/2" (63mm) diameter Innovative Controls or equal pressure gauges. Each gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauges shall display a range from 0 to 400 psi with black graphics on a white background.

The master intake and master discharge gauges shall be 4" (101mm) diameter IC pressure gauges. The gauge on the right shall be the master pump discharge gauge and display a range from 0 to 400 psi with black graphics on a white background.

One (1) Innovative Controls brand water tank level gauge shall be located at the pump operator's panel to provide a high-visibility display of the water tank level. Ten (10) high-intensity light emitting diodes (LEDs) on the display module shall have a 3-dimensional lens allowing the full, 3/4, 1/2, 1/4, and refill levels to be easily distinguished at a glance within full 180 degree visibility.

The display shall provide a steady indication of fluid level despite sloshing inside of the tank when the vehicle is in motion due to an "anti-slosh" feature.

In addition to the pump panel mounted lights there shall be one (1) Whelen PSTank2 series LED (Light Emitting Diode) strip light installed each side as specified. The system shall be controlled by an Innovative Control tank level driver module that is integral of the NFPA required pump panel mounted tank level light assembly. The remote strip light shall be arranged as follows: Full Green, 3/4 Blue, 1/2 Amber, 1/4 Red. Location of Whelen PSTank2 Strip Lights: each side of cab rear of front doors.

## **Electrical**

The apparatus shall incorporate a Weldon V-MUX multiplex 12 volt electrical system. The apparatus shall be electrical tested upon completion of the vehicle and prior to delivery.

A vehicle data recorder system shall be provided to comply with the 2009 and 2016 editions of NFPA 1901.

There shall be a visual and audible warning system installed in the cab that indicates the occupant buckle status of all cab seating positions that are designed to be occupied during vehicle movement.

The V-MUX multiplex electrical system shall include a Vista IV color display.

A Whelen Freedom IV Series 72" LED light bar model F4X7 with eight (8) LED modules shall be provided; two (2) front corner mounted LED modules, four (4) forward facing LED modules and two (2) side facing LED modules (with front vista windows) The light bars shall have clear lenses. One (1) pair of Whelen I (model MKEZ7) mounts shall be provided on the front light bar.

Eight (8) Whelen C-Series Super LED model C6L light heads and two (2) Whelen ION-T Series Super LED model TLI light heads shall be provided. The lights shall be Red with red lenses.

The rectangular lights shall include chrome flanges where applicable. The lights shall be wired with weatherproof connectors and shall be mounted as close to the corner points of the apparatus as is practical as follows:

- Two (2) C6L lights on the front of the apparatus facing forward.
- Two (2) C6L lights on the rear of the apparatus facing rearward.
- Two (2) lights each side of the apparatus, one (1) C6L each side at the forward most point (as practical), and one (1) TLI each side at the rearward most point (as practical).

- One (1) C6L light each side of the apparatus centrally located to provide mid ship warning light.

The side facing lights shall be located at forward most position, centered in rear wheel well, and side facing at rear of body in rubrail.

Two (2) Whelen model L31H Super LED beacons with Red domes shall be located rear upper body on aerial style brackets to meet Zone C upper requirements.

There shall be a 2" red LED hazard light installed as specified. The light shall be located center overhead.

Two (2) Whelen C-Series model C6L Super LED light heads shall be provided. The lights shall be Red with red lenses. Location: (1) each side of body rear facing up high.

A Federal Q2B mechanical siren with brake, officer side and driver side foot switches will be supplied and installed on the front bumper gravel shield.

A Federal PA300 siren model 690010 solid state electronic siren with attached noise-canceling microphone shall be installed. Operating modes shall include Hi-Lo, yelp, wail, P.A., air horn and radio re-broadcast. The siren shall be recessed mounted in the cab. The electronic siren control shall be located in the center overhead.

One (1) Federal Signal model ES100 Dynamax 100 watt speaker shall be flush mounted as far forward and as low as possible on the front of the vehicle.

LED clearance/marker lights shall be installed:

Five (5) amber LED clearance lights on the cab roof.

One (1) amber LED side turn/marker each side of cab ahead of the front door hinge.

One (1) red Trucklite LED clearance light each side, rear of body to the side.

Three (3) red Trucklite LED clearance lights centered at rear, recessed in the rub rail.

One (1) red Trucklite LED clearance light each side at the trailing edge of the apparatus body, recessed in the rub rail.

One (1) amber Trucklite LED clearance/auxiliary turn light each side front of body/module, recessed in the rub rail.

Three (3) Whelen C6 series LED (Light Emitting Diode) lights shall be installed in a chrome ABS housing in a vertical position, each side at the rear of the body and wired with weatherproof connectors.

One (1) Amdor Luma-Bar LED compartment light strip shall be mounted in each body compartment greater than 4 cu. ft. Transverse compartments shall have two (2) lights, located one each side. Compartment lights shall be wired to a master on/off rocker switch on the cab switch panel. A single water and corrosion-resistant switch with a polycarbonate actuator and sealed contacts shall control each compartment light. The switch shall allow the light to illuminate when the compartment door is open.

The apparatus shall be equipped with a sufficient quantity of lights to properly illuminate the ground areas around the apparatus in accordance with current NFPA requirements. The lights shall be TecNiq or equal model T440 4" circular LED (Light Emitting Diode) with clear lenses mounted in a resilient shock absorbent mount. Ground area lights shall be switched from the cab dash with the work light switch.

One (1) ground light shall be supplied under each side of the front bumper extension.

Lights in areas under the driver and crew area exits shall be activated automatically when the exit doors are opened.

The cab shall be equipped with a sufficient quantity of lights to properly illuminate the auxiliary steps and the ground areas below them in accordance with current NFPA requirements. The lights shall be switched from the cab dash with the work light switch. The lights shall also be activated automatically when the exit doors are opened.

Two (2) Whelen round 12 Super LED model PFBP12C floodlights with black housing and chrome rear covers shall be installed at the rear of the apparatus. The rear deck lights shall be switched with the work light switch in the cab. Location: rear body/beavertail area on the trailing edge up high.

A Whelen LED light model PFBP12C shall be installed at the rear area of the crosslay to provide crosslay lighting per current NFPA 1901. The crosslay light shall be switched with work light switch in the cab.

Two (2) Whelen model 60C0ELZR 600 series Super LED clear scene lights shall be provided. Lights shall be located (1) each side of cab, rearward of forward doors, up high and switched in cab (side facing lights switched separately).

One (1) Amdor H2O Luma-Bar shall be installed at the front area of the hose bed to provide hose bed lighting per current NFPA 1901. All electrical connectors are to be enclosed in the housing providing protection against the elements. The hose bed light shall be switched with work light switch in the cab.

There shall be lighting provided in compliance with NFPA to illuminate the engine compartment area. The light wiring circuit shall activate when the cab is tilted and master power is switched on.

An LED light shall be provided in the pump compartment area for NFPA compliance. The light shall be wired to operate with the work light switch in the cab.

Three (3) TecNiq model E10 LED lights shall be mounted under a light shield directly above each side pump panel. The work light switch in the cab shall activate the lights when the park brake is set.

An audible alarm shall be provided through the multiplex display(s) in the cab wired into the door ajar or indicator.

There shall be a Federal Signal (Sony) camera model number CAMCCD-REARNTSC provided and mounted on the rear of the apparatus. The camera shall feature a wide angle lens, IR LED assisted illumination for enhanced low-light performance, non-corrosive mounting bracket, and stainless steel hardware. The camera shall be wired through multiplex display, interlocked with the chassis transmission. When the apparatus is placed in reverse the camera shall automatically be activated and when the transmission is placed in any other gear the screen shall return to the previously displayed screen.

A Federal Signal (Sony) side vision camera model CAMCCD-SIDENSTC will be located on the officer side on front cab corner (approx 31" bottom of camera to bottom of cab). This camera will be interlocked with the turn indicator.

A diamond plate protective shield shall be provided for the top and sides of a camera. The shield shall be designed not to impede in the operational envelope of the camera.

An electronic back-up alarm shall be supplied. The 97 dB alarm shall be wired into the chassis back-up lights to signal when the vehicle is in reverse gear.

One (1) FireTech or equal, 12V LED model FT-B-72-ML-W 75" white housing brow light with integral marker lights shall be provided. The light shall be installed on the front cab brow in place of the standard DOT marker lights.

### **DOT Required Drive Away Kit**

Three (3) triangular warning reflectors with carrying case shall be supplied to satisfy the DOT requirement.

### **Additional Supplied Equipment**

Two 10ft lengths 6" PVC hard suction hose with NST couplings  
Four Streamlight 44451 Vulcan handlights with charger, installed  
Two TFT AB1STNX intake valve, 6" F x 5" Storz, with Blind caps

### **Paint, Graphics**

The cab shall have a two-tone paint break.

The apparatus cab shall be painted Sikkens or equal FLNA3225E-1 Red.

The upper section of the cab shall be painted FLNA4006 White.

The apparatus body shall be painted Sikkens FLNA3225E-1 Red.

The interior of the cab shall be painted Zolatone gray #20-64. Prior to painting, all exposed interior metal surfaces shall be pretreated using a corrosion prevention system.

A minimum 1" / 4" / 1" white reflective stripe will be supplied and installed. There shall also be a white reflective stripe in the body rubrail.

Scotchlite cab stripe shall be 3/4" in width total, 1/2" gold stripe with a 1/8" customer specified color outline on both sides and a clear polyurethane coating. Stripe shall be centrally located and shall contour with the cab, following the paint break.

A Sign Gold or equal lettering package shall be supplied. Lettering format to be similar to existing City pumpers

Chevron style Reflexite V98 striping shall be provided on the rear of the apparatus. The stripes shall consist of 6" Red/Fluorescent Yellow Green alternating stripes in an "A" pattern.

1" wide yellow perimeter marking consisting of individual Reflexite diamonds shall be applied to indicate the outside edge of designated standing and walking areas above 48" from the ground in compliance with 2016 NFPA 1901. Steps, ladders and areas with a railing or structure at least 12" high are excluded from this requirement.

## **WARRANTIES**

### **Standard 1 Year Warranty**

The apparatus manufacturer shall provide a full 1-year standard warranty. All components manufactured by the apparatus manufacturer shall be covered against defects in materials or workmanship for a 1-year period. All components covered by separate suppliers such as engines, transmissions, tires, and batteries shall maintain the warranty as provided by the component supplier. A copy of the warranty document shall be provided with the proposal.

### **Lifetime Frame Warranty**

The apparatus manufacturer shall provide a full lifetime frame structural warranty. This warranty shall cover all apparatus manufacturer designed frame, frame members, and cross-members against defects in materials or workmanship for the lifetime of the covered apparatus. A copy of the warranty document shall be provided with the proposal. Frame warranties that do not cover cross-members for the life of the vehicle shall not be acceptable.

### **10 Year 100,000 Mile Structural Warranty**

The apparatus manufacturer shall provide a comprehensive 10 year/100,000 mile structural warranty. This warranty shall cover all structural components of the cab and/or body manufactured by the apparatus manufacturer against defects in materials or workmanship for 10 years or 100,000 miles, whichever occurs first. Excluded from this warranty are all hardware, mechanical items, electrical items, or paint finishes. A copy of the warranty document shall be provided with the proposal.

### **10 Year Stainless Steel Plumbing Warranty**

The apparatus manufacturer shall provide a full 10-year stainless steel plumbing components warranty. This warranty shall cover defects in materials or workmanship of apparatus manufacturer designed foam/water plumbing system stainless steel components for 10 years. A copy of the warranty document shall be provided with the proposal.

### **10 Year Paint and Corrosion Warranty**

The apparatus manufacturer shall provide a 10-year limited paint and corrosion perforation warranty. This warranty shall cover paint peeling, cracking, blistering, and corrosion provided the vehicle is used in a normal and reasonable manner.

The paint shall be prorated for 10 years as follows:

#### **Topcoat & Appearance:**

(Gloss, Color Retention, Cracking)

0 to 72 months	100%
73 to 120 months	50%

#### **Coating System, Adhesion & Corrosion:**

(Includes Dissimilar metal corrosion, Flaking, Blistering, Bubbling)

0 to 36 months	100%
37 to 84 months	50%
85 to 120 months	25%

Corrosion perforation shall be covered 100% for 10 years. Corrosion perforation is defined as complete penetration through the exterior metal of the apparatus.

The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. A copy of the warranty document shall be provided with the proposal.

UV paint fade shall be covered in a separate warranty supplied by Akzo Nobel (Sikkens) and shall be for a minimum of 10 years.

### **25 Year Frame Rail Corrosion Warranty**

The chassis manufacturer shall provide a 25 year corrosion warranty on the chassis frame rails. This warranty shall cover the chassis frame rails, including frame rail liners (if equipped), for a

period of 25 years after the date on which the vehicle is delivered to the original purchaser. A copy of the warranty document shall be provided with the proposal. Please refer to warranty document for complete details and exclusions.

## **Manuals**

Two (2) copies of all operator, service, and parts manuals **MUST** be supplied at the time of delivery in digital format

A Fire Apparatus Safety Guide published by FAMA shall be supplied. This safety manual is intended to point out some of the basic safety situations that may be encountered during the normal operation and maintenance of a fire apparatus and to suggest possible ways of dealing with these situations. .